

**LESSON
MASTER****10-5
B****Questions on SPUR Objectives****Vocabulary**

1. In the FOIL algorithm, explain what the letters F-O-I-L represent.

Skills Objective C: Multiply two binomials.

In 2–14, multiply and simplify.

2. $(u + 3)(u + 10)$

3. $(x - 4)(x - 5)$

4. $(e - 2)(e + 1)$

5. $(y + 6)(y - 4)$

6. $(2a + 1)(a - 7)$

7. $(3b + 6)(4b + 2)$

8. $(x - 7)(x + 7)$

9. $(r^2 + 3r)(r + 4)$

10. $(4m + 7)(4m - 7)$

11. $(3a + b)(2a - 8b)$

12. $(2u^2 - 3uv)(6u - 2v)$

13. $(p + 3q)^2$

14. $(2 + \sqrt{3})(8 - \sqrt{3})$

In 15 and 16, fill in the blanks.

15. $(x + 5)(x + \underline{\hspace{2cm}}) = x^2 + 8x + 15$

16. $(y - \underline{\hspace{2cm}})(y + 4) = y^2 + 3y - 4$

► **LESSON MASTER 10-5 B** page 2

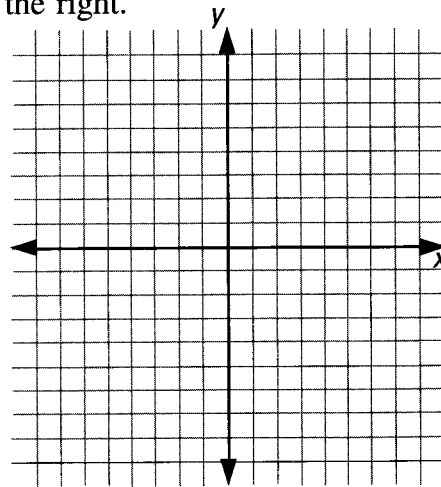
17. Complete the table for each equation, and graph the points for both equations on the grid at the right.

a. $y = (x - 1)(x - 3)$

x	-2	-1	0	1	2	3	4	5
y								

b. $y = x^2 - 4x + 3$

x	-2	-1	0	1	2	3	4	5
y								



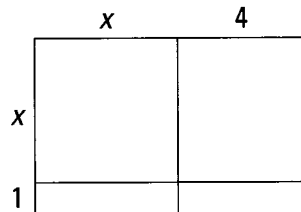
18. What is true of the points you graphed for the equations above? Explain why this relationship exists.

Representations Objective I: Represent the product of two binomials as an area.

In 19 and 20, an area representation is shown.

- a. Express the area as length \cdot width. b. Multiply and simplify the expression you wrote for Part a.

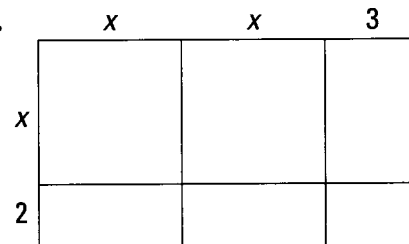
19.



a. _____

b. _____

20.



a. _____

b. _____

21. a. Multiply $(x + 3)(2x + 1)$.

- b. At the right, draw an area diagram to represent the multiplication.

22. An oil painting that measures 14 in. by 20 in. is surrounded by a frame f in. wide. Write a polynomial for the total area of the painting and frame.

LESSON MASTER**10-4**
B

Questions on SPUR Objectives

Skills Objective B: Multiply polynomials.

In 1-11, multiply and simplify.

- $(a + 4)(a^2 + 4a - 3)$ $a^3 + 8a^2 + 13a - 12$
- $(m - 1)(m^2 - 4m + 5)$ $m^3 - 5m^2 + 9m - 5$
- $(a + b)(2a - 8b)$ $2a^2 - 6ab - 8b^2$
- $(x^2 + 6x + 9)(x^2 - 1)$ $x^4 + 6x^3 + 8x^2 - 6x - 9$
- $(2y^2 + 3y + 4)(y^2 - y + 2)$ $2y^4 + y^3 + 5y^2 + 2y + 8$
- $(-a^2 + 3a - 2)(a^2 + 3a - 2)$ $-a^4 + 9a^2 - 12a + 4$
- $(2a + 4b - 7)(3a - b + 1)$ $6a^2 + 10ab - 4b^2 - 19a + 11b - 7$
- $(3m + 4)(2m - 2) - (3m)^2$ $-3m^2 + 2m - 8$
- $4(3e^2 + 6e - 9) - (e + 1)(e - 1)$ $11e^2 + 24e - 35$
- $(p + q + r)(p - q - r) + r(r + q)$ $p^2 - qr - q^2$
- $(y + 6)(y + 2)(y - 3)$ $y^3 + 5y^2 - 12y - 36$

Representations Objective I: Represent areas and volumes of figures with polynomials.12. a. Express the area of the largest rectangle as length \cdot width.

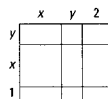
$$(x + y + 2)(x + y + 1)$$

b. Express this area as the sum of nine smaller rectangles.

$$xy + y^2 + 2y + x^2 + xy + 2x + x + y + 2$$

c. Simplify your answer to Part b.

$$x^2 + 2xy + y^2 + 3x + 3y + 2$$



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LESSON MASTER 10-4 B page 213. A cube has edges of length 8 inches. Suppose a larger cube has edges that are x inches longer.

a. What is the volume of the first cube?

$$512 \text{ in}^3$$

b. Write an expression for the volume of the larger cube.

$$(x^3 + 24x^2 + 192x + 512) \text{ in}^3$$

$$(x^3 + 24x^2 + 192x + 512) \text{ in}^3$$

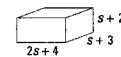
c. How much greater is the volume of the larger cube than the volume of the smaller cube?

$$192x \text{ in}^3$$

14. a. Write two expressions for the volume of the box at the right.

$$(2s + 4)(s + 3)(s + 2)$$

$$2s^3 + 14s^2 + 32s + 24$$

b. Check your answer by substituting 3 for s .

$$(2 \cdot 3 + 4)(3 + 3)(3 + 2) = 10 \cdot 6 \cdot 5 = 300$$

$$2 \cdot 3^3 + 14 \cdot 3^2 + 32 \cdot 3 + 24 = 54 + 126 + 96 + 24 = 300$$

Review Objective F, Lesson 9-215. Use the equation $y = x^2 - 2x - 8$.a. Make a table of values using x -values -3, -2, -1, 0, 1, 2, and 3.

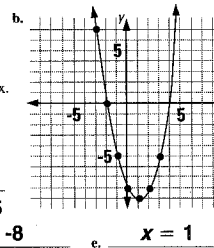
b. Graph the equation.

c. Give the coordinates of the vertex.

d. Give the y -intercept.

e. Give the equation of the axis of symmetry.

x	-3	-2	-1	0	1	2	3
y	7	0	-5	-8	-9	-8	-5

c. $(1, -9)$ d. -8 e. $x = 1$ 

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LESSON MASTER**10-5**
B

Questions on SPUR Objectives

Vocabulary

1. In the FOIL algorithm, explain what the letters F-O-I-L represent.

F: product of **FIRST** terms**O:** product of **OUTSIDE** terms**I:** product of **INSIDE** terms**L:** product of **LAST** terms**Skills** Objective C: Multiply two binomials.

In 2-14, multiply and simplify.

- $(u + 3)(u + 10)$ $u^2 + 13u + 30$
- $(x - 4)(x - 5)$ $x^2 - 9x + 20$
- $(e - 2)(e + 1)$ $e^2 - e - 2$
- $(y + 6)(y - 4)$ $y^2 + 2y - 24$
- $(2a + 1)(a - 7)$ $2a^2 - 13a - 7$
- $(3b + 6)(4b + 2)$ $12b^2 + 30b + 12$
- $(x - 7)(x + 7)$ $x^2 - 49$
- $(r^2 + 7r)(r + 4)$ $r^3 + 7r^2 + 12r$
- $(4m + 7)(4m - 7)$ $16m^2 - 49$
- $(3a + b)(2a - 8b)$ $6a^2 - 22ab - 8b^2$
- $(2u^2 - 3uv)(6u - 2v)$ $12u^3 - 22u^2v + 6uv^2$
- $(p + 3q)^2$ $p^2 + 6pq + 9q^2$
- $(2 + \sqrt{3})(8 - \sqrt{3})$ $13 + 6\sqrt{3}$

In 15 and 16, fill in the blanks.

15. $(x + 5)(x + \underline{3}) = x^2 + 8x + 15$

16. $(y - \underline{1})(y + 4) = y^2 + 3y - 4$

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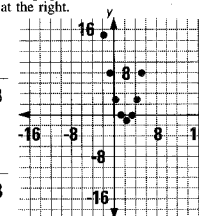
17. Complete the table for each equation, and graph the points for both equations on the grid at the right.

a. $y = (x - 1)(x - 3)$

x	-2	-1	0	1	2	3	4	5
y	15	8	3	0	-1	0	3	8

b. $y = x^2 - 4x + 3$

x	-2	-1	0	1	2	3	4	5
y	15	8	3	0	-1	0	3	8



18. What is true of the points you graphed for the equations above? Explain why this relationship exists.

Sample: The two sets are the same; $x^2 - 4x + 3$ is the expanded form of

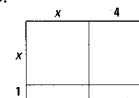
$$(x - 1)(x - 3).$$

Representations Objective I: Represent the product of two binomials as an area.

In 19 and 20, an area representation is shown.

a. Express the area as length \cdot width. b. Multiply and simplify the expression you wrote for Part a.

19.



$$(x + 4)(x + 1)$$

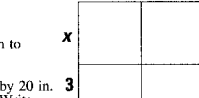
$$x^2 + 5x + 4$$

21. a. Multiply $(x + 3)(2x + 1)$.

$$2x^2 + 7x + 3$$

b. At the right, draw an area diagram to represent the multiplication.

20.



$$(2x + 3)(x + 2)$$

$$2x^2 + 7x + 6$$

22. An oil painting that measures 14 in. by 20 in. is surrounded by a frame f in. wide. Write a polynomial for the total area of the painting and frame.

$$(4f^2 + 68f + 280) \text{ in}^2$$

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